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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,015	01/16/2004	Ryan D. McMurtrey	B-347	8514

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03/08/2007

EXAMINER

KRISHNAMURTHY, RAMESH

ART UNIT

PAPER NUMBER

3753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/760,015	MCMURTREY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ramesh Krishnamurthy	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 3 - 19, 21 - 41 and 43 - 53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3 - 19, 21 - 41 and 43 - 53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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This office action is responsive to communications filed 12/21/2006.

**Claims 1, 3 - 19, 21 - 41 and 43 – 53 are pending.**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3, 14 – 19, 36 – 41, 43 and 49 – 53 are rejected under 35 U.S.C. 102(b) as anticipated by Stanford (US 429,658) or, in the alternative, under 35

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U.S.C. 103(a) as obvious over the combination of Stanford (US 429,658) and Pearson (US 2,520,430).

Stanford discloses (see Figs. 1 – 2, for example) a fluid flow control system comprising: a controller (i.e. operator that operates the linear positioning member (k)); at least one fluid flow control device (Fig. 1) operably coupled with the controller, the at least one fluid flow control device comprising: a valve having a fluid inlet (a'), a fluid outlet (d) and a flow path defined therebetween, the valve further including a valve seat (near (b)) in communication with the flow path and a valve stem (c') disposed within a valve seat and cooperatively configured with the valve seat to cause the valve stem to advance or back off within the valve seat responsive to rotation of the valve stem about a first axis; a gear member (g) coupled to the valve stem; and a linear positioning member (k) having at least a portion thereof configured to complementarily engage the gear member, wherein the linear positioning member is configured to be displaced along a second axis and cause rotation of the gear member and the valve stem about the first axis upon such displacement of the linear positioning member along the second axis. It is further noted that the gear member and worm gear in Stanford comprises metal which here is taken to include all known metals including the both carbon steel and brass. Regarding the limitations recited in claims 15 – 17, 36 – 38 and 49 – 52 are essentially functional in nature that largely reflect the intended use of the apparatus and the apparatus of Stanford as set forth above is capable of such use and meeting the functional limitations referred to hereinabove. A linear positioning actuator is inherent to Stanford since such is needed to drive the rack (i).

It is noted that the arrangement disclosed in Stanford or that according to the combination of Stanford and Pearson, as set forth above, necessarily performs the method recited in claims 41, 43 and 49 – 53 in its usual and normal operation. The worm in Stanford or that in the combination of Stanford and Pearson includes all the known types of worm including the helically cut worm.

It is believed that the rack (i) in Stanford includes a worm gear. Pearson discloses a rack K1 having a worm gear driving a complementary worm wheel (K). Examiner takes official notice of the well-known fact that a worm gear provides a compact means for providing a high gear ratio and generally prevents the driven gear from driving the worm.

Thus, should it be determined that the rack (i) in Stanford does not comprise a worm, then it would have been obvious to provide the rack in Stanford with a worm, as evident from Pearson, for the purpose of providing a compact means for providing a high gear ratio and generally preventing the driven gear from driving the worm.

It is further noted that Pearson discloses an electric motor driving the worm (K1).

5. Claims 5 – 13, 31 – 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanford as applied to claims 1, 3, 14 – 19, 36 – 41, 43 and 49 – 53 or, in the alternative, as obvious over the combination of Stanford (US 429,658) and Pearson (US 2,520,430) above, and further in view of Grouw, III (US 4,759,386).

The patent to Stanford discloses the claimed invention with the exception of explicitly disclosing the linear positioning actuator to include a motor.

Grouw, III discloses a motor (28) for positioning a linear actuating member (20) associated with a valve for the purpose of accurate automated operation of the member.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in Stanford a motor for actuating the linear actuating member for the purpose of accurate automated operation of the member, as evident from Grouw, III. It is noted that the motor in Grouw, III is applicable to all known types of motor (see claim 1, for example) including the well-known stepper motor. Limit switches (98, 100) for limiting the travel of the linear positioning member (20) are disclosed. Also disclosed is potentiometer position sensor (76) for sensing the position of the linear positioning member (20) (see Col. 3, lines 40 – 48).

The combination of Stanford and Pearson does include an electric motor which here is taken to include all known types of electric motor including the well-known stepper motor. Official notice is taken of the well-known fact that electric motor includes those that operate on direct current, with the direct current being obtained from the alternating current using a transformer. That the input signals are in the range 4 – 20 milliamps is well known in the electrically driven valve art.

6. Claims 21 – 27 and 44 – 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanford or, over the combination of Stanford (US 429,658) and Pearson (US 2,520,430), as applied to claims 1, 3, 14 – 19, 36 – 41, 43 and 49 – 53 above, and further in view of Shimomura et al. (US 5,129,418).

The patent to Stanford or the combination of Stanford and Pearson discloses the claimed invention with the exception of explicitly disclosing the controller to comprise a P.I.D. controller and/or sensors operably connected to the controller.

The patent to Shimomura et al. discloses that it is known in the art to employ a P.I.D. controller and/or sensors operably connected to the controller for the purpose of automatically controlling the flow based on desired sensed parameter values.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the device of Stanford a controller that comprises a P.I.D. controller and/or sensors operably connected to the controller for the purpose of automatically controlling the flow based on desired sensed parameter values, as recognized by Shimomura et al..

7. Claims 28 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanford or, in the alternative, over the combination of Stanford (US 429,658) and Pearson (US 2,520,430), as applied to claims 1, 3, 14 – 19, 36 – 41, 43 and 49 – 53 above, and further in view Weissgerber et al. (US 6,712,085).

The patent to Stanford or the combination of Stanford and Pearson discloses the claimed invention with the exception of explicitly disclosing a pump that is configured to provide a supply of flow through the valve.

Weissgerber et al. discloses a fluid flow system wherein a pump (21) is operably connected to a controller (27) that controls the pump for providing a desired fluid through the system.

It would have been obvious to one ordinary skill in the art at the time the invention was made to have provided in the arrangement of Stanford a pump that is configured to provide a supply of flow through the valve, for the purpose of providing a controlled fluid flow therethrough, as recognized by Weissgerber et al..

### ***Response to Arguments***

8. Applicant's arguments filed 12/21/2006 have been fully considered but they are not persuasive. Applicant's argument concerning the Stanford reference is that it lacks a worm drive. However, as noted above, it is believed that the rack (i) in Stanford includes a worm gear, and, should it be determined that the rack (i) in Stanford does not comprise a worm, then it would have been obvious to provide the rack in Stanford with a worm, as evident from Pearson, for the purpose of providing a compact means for providing a high gear ratio and generally preventing the driven gear from driving the worm. In regard to the arguments concerning the pressure limits recited or the value of the flow coefficient, it is noted that these recitations are functional in nature that the arrangement of Stanford or in the alternative, the arrangement of Stanford and Pearson is capable of. In regard to the argument that Stanford does not disclose a linear actuator, it is noted that for the arrangement in Stanford to function, a drive for the rack (i) is essential which here is taken to include all known forms for such a drive including the known linear actuator. Other arguments concerning the nature of the motor, use of transformer, etc. have been responded to in the body of the rejection of the relevant claims, above.

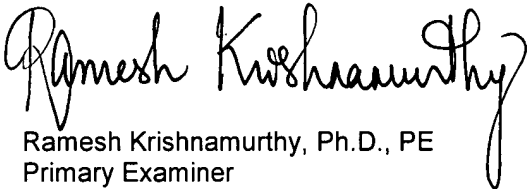


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (571) 272 – 4914. The examiner can normally be reached on Monday - Friday from 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel, can be reached on (571) 272 – 4929. The fax phone number for the organization where this application or proceeding is assigned is (571) 273 – 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ramesh Krishnamurthy, Ph.D., PE  
Primary Examiner  
Art Unit 3753